

1.3 Surface Areas of Objects Made from Right Rectangular Prisms

Math Makes Sense Page 30, 31

SOLUTIONS

10. a) Do not include the base in the calculation.

Surface area of garage:

Area of roof: $7.8 \times 5.0 = 39$

Area of left and right walls: $2(5.0 \times 3.8) = 38$

Area of front and back walls: $2(3.8 \times 7.8) = 59.28$

Surface area of shed:

Area of roof: $3.9 \times 2.5 = 9.75$

Area of left and right walls: $2(2.5 \times 3.8) = 19$

Area of front and back walls: $2(3.9 \times 3.8) = 29.64$

In square metres, total surface area – overlap =

$39 + 38 + 59.28 + 9.75 + 19 + 29.64 - 2(3.9 \times 3.8) = 165.03$

The surface area of the building is 165.03 m^2 .

- b) Surface area of the building, in square metres, without doors, window, and roof:

$165.03 - (2 \times 3) - (2 \times 1) - (1 \times 1) - (7.8 \times 5.0) - (2.5 \times 3.9) = 107.28$

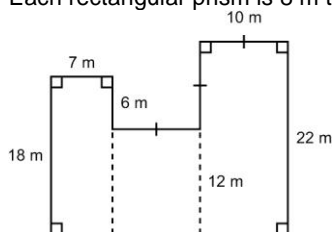
Cost of siding:

$\$15 \times 107.28 = \1609.2

It will cost \$1609.20 to cover this building with siding.

11. Divide the building into three rectangular prisms.

Each rectangular prism is 8 m tall.



Since this is a building, we do not include the area of the floor.

Surface area of left prism:

Area of roof: $18 \times 7 = 126$

Area of front and back walls: $2(8 \times 7) = 112$

Area of left and right walls: $2(18 \times 8) = 288$

Surface area of middle prism:

Area of roof: $10 \times 12 = 120$

Area of front and back walls: $2(10 \times 8) = 160$

Area of left and right walls: $2(12 \times 8) = 192$

Surface area of right prism:

Area of roof: $10 \times 22 = 220$

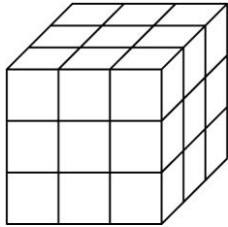
Area of front and back walls: $2(10 \times 8) = 160$

Area of left and right walls: $2(22 \times 8) = 352$

In square metres, total surface area of building – overlap =

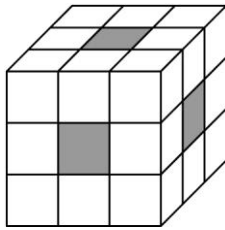
$$126 + 112 + 288 + 120 + 160 + 192 + 220 + 160 + 352 - 4(12 \times 8) = 1346$$

12. I built a 3 by 3 by 3 cube.

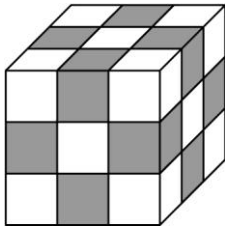


a) The surface area, in square units, of the large cube is: $6 \times 9 = 54$

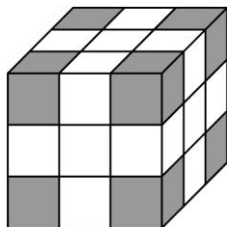
c) i) $1 \times 6 = 6$; 6 cubes



ii) 12 cubes



iii) 8 cubes



iv) 1 cube (at centre)

v) 0 cubes

I could check by building a cube with linking cubes

